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10/576,389	04/19/2006	Philippe Gilberton	PU030243	4459

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EXAMINER	
HANNON, CHRISTIAN A	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/576,389	GILBERTON, PHILIPPE	
	Examiner	Art Unit	
	Christian A. Hannon	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *14-16* is/are allowed.

6)☒ Claim(s) *1,2,8,9 and 17* is/are rejected.

7)☒ Claim(s) *3-7 and 10-13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/19/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 4/19/2006 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statement.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2, 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright (US 6,973,138).

Regarding claim 1, Wright teaches an apparatus for use in a wireless transmitter the apparatus comprising a amplifier for amplifying a radio frequency signal to provide an RF output signal for transmission (Column 4, lines 39-44) and a predistorter for injecting a distortion signal into the RF signal prior to amplification for use in linearizing the amplifier (Column 4, Lines 27-29) wherein the predistorter includes a phase shifter

(Column 7, Lines 17-19). However Wright does not explicitly teach that the predistorter operates at less than twice a carrier frequency of the RF signal. Wright does in fact teach that the intended bandwidth of the RF transmitters, and there components thereof, namely the phase shifter, operate so as to not extend substantially beyond one octave of the carrier frequency, that is twice the carrier frequency in order to avoid second harmonic carrier distortions. Therefore it would be obvious to implement the phase shifter in accordance with Wrights own teachings in order to eliminate second order harmonic distortions to maximize the amplifiers linearity.

Regarding claim 2 Wright teaches claim 1, further including a signal path for conveying a clock signal having a frequency les than twice a carrier frequency of the RF signal and wherein the predistorter is in the signal path of the clock signal (Column 8, Lines 40-49). It is noted by the examiner that as Wright teaches that the components of the transmitter, namely the phase shifter or FIR filter, operate so as to not extend substantially beyond one octave of the carrier frequency, that is twice the carrier frequency in order to avoid second harmonic carrier distortions. Therefore those digital lines would need to be clocked in accordance.

Regarding claim 8, Wright teaches an apparatus for use in a wireless transmitter comprising an amplifier for amplifying an RF signal and a distortion signal to provide an RF output signal for transmission, where the RF signal has a carrier frequency (Column 4, lines 39-44) and a phase shifter for providing a phase shifted signal, wherein a change in phase of the phase shifted signal results in a change in phase of the distortion signal (Column 4, Lines 27-29; Column 7, Lines 17-19). However Wright does

not explicitly teach that the phase shifter is clocked at less than twice a carrier frequency of the RF signal. Wright does in fact teach that the intended bandwidth of the RF transmitters, and there components thereof, namely the phase shifter, operate so as to not extend substantially beyond one octave of the carrier frequency, that is twice the carrier frequency in order to avoid second harmonic carrier distortions. Therefore it would be obvious to implement the phase shifter in accordance with Wrights own teachings in order to eliminate second order harmonic distortions to maximize the amplifiers linearity.

Regarding claim 9, Wright teaches claim 8 further comprising a RF IC for providing the RF signal and the clock signal and wherein the RF IC is responsive to the phase-shifted signal for providing the distortion signal. It is obvious and well known in the art that circuits may be constructed as integrated circuits, and as the applicant provides no unknown benefit by doing so the claim is rejected in light of this knowledge.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim 17 is rejected under 35 U.S.C. 102(e) as being anticipated by Wright.

Regarding claim 17, Wright teaches a method for use in linearizing an amplifier of a wireless transmission system the method comprising providing a carrier signal, mixing the carrier signal with an IF signal to provide a distortion signal, injecting the distortion signal into an RF signal, operating an amplifier in a non-linear region for amplification of the RF signal to provide an RF output signal and adjusting a phase of the carrier signal and an amplitude of the distortion signal for linearizing the amplifier (Column 4, Lines 15-54).

Allowable Subject Matter

7. Claims 14-16 are allowed.

Regarding claim 14, Wright teaches an apparatus for use in linearizing an amplifier of a wireless transmission system wherein the amplifier amplifies a RF signal for transmission, however Wright fails to detail that the explicit architecture of system components is made so that a coupler disposed between the amplitude adjuster and the amplifier for injecting the distortion signal into the amplifier and that the controller for controlling the phase shifter and the amplitude adjuster are so that the distortion signal coupled into the amplifier linearizes the amplifier.

Claims 15-16 are allowed as they depend from claim 14.

8. Claims 3-7 & 10-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 3, Wright teaches claim 2, however fails to detail the explicit architecture of system components is made so that a coupler disposed between the amplitude adjuster and the amplifier for injecting the distortion signal into the amplifier and that the controller for controlling the phase shifter and the amplitude adjuster are so that the distortion signal coupled into the amplifier linearizes the amplifier.

Claims 4-7 are objected to as they depend from claim 3.

Regarding claim 10, Wright teaches claim 9, however fails to detail the explicit architecture of system components is made so that a coupler disposed between the amplitude adjuster and the amplifier for injecting the distortion signal into the amplifier and that the controller for controlling the phase shifter and the amplitude adjuster are so that the distortion signal coupled into the amplifier linearizes the amplifier.

Claims 11-13 are objected to as they depend from claim 10.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Noori (US 6,922,552) discloses a linearization method and signal-processing device.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian A. Hannon whose telephone number is (571) 272-7385. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CH

C. A. Hannon
September 10, 2007

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